Claim Amendments

Please amend the claims as follows:

1. (original) An apparatus for conducting chemical reactions wherein a plurality of drops of reagents are applied to the surface of a support in the form of an array, said apparatus comprising:

(a) a chamber,

(b) a gas inlet for introducing a gas into the interior of said chamber,

(c) a device for dispensing drops of reagents for conducting said chemical reactions in fluid communication with said chamber, and

(d) an opening in said chamber for exit of said gas, wherein said opening is designed to provide a contracting section, a section having substantially constant cross-sectional area and a diffusing section through said opening.

2. (original) An apparatus according to Claim 1 wherein contraction in said contracting section takes place over a region from about 0.15 to about 2 times the width of said section having substantially constant cross-sectional area.

3. (original) An apparatus according to Claim 1 wherein said diffusing section expands at a rate of about 0.08 to about 0.18 cm/cm.

4. (original) An apparatus for synthesizing a plurality of biopolymers on a support in the form of an array, said apparatus comprising:

(a) a chamber,

(b) a gas inlet for introducing a gas into the interior of said chamber,

(c) a device for dispensing reagents for synthesizing said biopolymers in the form of an array, said device being in fluid communication with said chamber, and

(d) an opening in said chamber for exit of said gas, wherein at least one wall of said opening is designed to provide a contracting section, a section having substantially constant cross-sectional area and a diffusing section through said opening.

5. (original) An apparatus according to Claim 4 wherein contraction in said contracting section takes place over a region from about 0.15 to about 2 times the width of said section having substantially constant cross-sectional area.

6. (original) An apparatus according to Claim 4 wherein said diffusing section expands at a rate of about 0.08 to about 0.18 cm/cm.

7. (original) An apparatus according to Claim 4 wherein said opening comprises a pair of side walls and both of said side walls of said pair are designed to provide a contracting section, a section of substantially constant cross-sectional area and a diffusing section through said opening.

8. (original) An apparatus according to Claim 4 further comprising a mechanism for moving said support into and out of said chamber and for positioning said support relative to said device for dispensing reagents.

9. (original) An apparatus according to Claim 8 further comprising a controller for controlling the movement of said mechanism for moving said support.

10. (original) An apparatus according to Claim 8 wherein said mechanism moves said support into and out of said chamber through said opening.

11. (original) An apparatus according to Claim 8 wherein said mechanism comprises a holding element for said support wherein said holding element is a low drag body having Reynolds numbers that are less than about 3000.

12. (original) An apparatus according to Claim 4 further comprising a manifold comprising at least two compartments, each of said compartments being in fluid communication with a respective gas inlet.

13. (original) An apparatus according to Claim 4 further comprising a mechanism for straightening the flow of a gas entering said gas inlet.

14. (original) An apparatus according to Claim 13 wherein said mechanism is a perforated element.

15. (original) An apparatus for synthesizing an array of biopolymers on a support, said apparatus comprising:

(a) a chamber,

(b) a gas inlet for introducing a gas into the interior of said chamber,

(c) a device for dispensing reagents for synthesizing said biopolymers, said device being in fluid communication with said chamber,

(d) an opening for exit of said gas, said opening comprising a pair of side walls, wherein at least one of said side walls is designed such that said opening comprises a contracting section, a section having substantially constant cross-sectional area and a diffusing section, wherein contraction in said contracting section takes place over a region from about 0.15 to about 2 times the width of said section having substantially constant cross-sectional area and wherein said diffusing section expands at a rate of about 0.08 to about 0.18 cm/cm and

(e) a mechanism for moving said support into and out of said chamber through said opening and for positioning said support relative to said device for dispensing reagents, wherein said mechanism comprises a holding element for said support wherein said holding element is a low drag body having Reynolds numbers that are less than about 3000.

16. (original) An apparatus according to Claim 15 wherein both of said side walls of said pair of side walls comprise a contracting section and a diffusing section.

17. (original) An apparatus according to Claim 15 further comprising a controller for controlling the movement of said mechanism for moving said support.

18. (original) An apparatus according to Claim 15 further comprising a manifold comprising at least two compartments, each of said compartments being in fluid communication with a respective gas inlet.

19. (original) An apparatus according to Claim 15 further comprising a mechanism for straightening the flow of a gas entering said gas inlet, said mechanism comprising a perforated element.

20. (currently amended) A method for controlling the atmosphere in a reaction chamber, said method comprising:

(a) introducing a gas into said reaction chamber wherein said gas has a positive and substantially uniform unidirectional flow through said chamber and

(b) allowing said gas to exit said reaction chamber through a gas outlet in a direction that is the same as that of said unidirectional flow wherein in said gas outlet said gas flow is first contracted and then diffused wherein said reaction chamber is said chamber of an apparatus according to Claim 1.

21. (original) A method according to Claim 20 wherein said gas is contracted by a narrowing of at least one side wall in said gas outlet.

22. (original) A method according to Claim 21 wherein said narrowing takes place over a region from about 0.15 to about 2 times the width of said section having substantially constant cross-sectional area.

23. (original) A method according to Claim 20 wherein said gas is diffused by an expansion of at least one side wall in said gas outlet.

24. (original) A method according to Claim 23 wherein said expansion takes place over a region from about 2 to about 3 times the width of said section having substantially constant cross-sectional area.

25. (original) A method according to Claim 20 wherein said gas is contracted by a narrowing of opposing side walls in said gas outlet.

26. (original) A method according to Claim 20 wherein said gas is diffused by an expansion of opposing side walls in said gas outlet.

27. (currently amended) A method for synthesizing a plurality of biopolymers on a support in the form of an array, said method comprising:

(a) introducing a support into a reaction chamber wherein said reaction chamber has a positive and substantially uniform unidirectional flow of gas therethrough wherein discrete sites on the surface of said support are activated and wherein said gas exits said

reaction chamber through a gas outlet in a direction that is the same as said unidirectional flow wherein in said gas outlet said gas flow is first contracted and then diffused wherein said reaction chamber is said chamber of an apparatus according to Claim 4,

(b) bringing said support and a dispensing system for dispensing reagents for the synthesis of said biopolymers into a dispensing position relative to said activated discrete sites on said surface,

(c) dispensing said reagents to said discrete sites,

(d) removing said support and/or said dispensing system from said relative dispensing position, and

(e) optionally repeating steps (a) through (d) until said biopolymer is formed.

28. (original) A method according to Claim 27 wherein said gas is contracted by a narrowing of at least one side wall in said gas outlet.

29. (original) A method according to Claim 28 wherein said narrowing takes place over a region from about 0.15 to about 2 times the width of said section having substantially constant cross-sectional area.

30. (original) A method according to Claim 27 wherein said gas is diffused by an expansion of at least one side wall in said gas outlet.

31. (original) A method according to Claim 30 wherein said expansion takes place over a region from about 2 to about 3 times the width of said section having substantially constant cross-sectional area.

32. (original) A method according to Claim 27 wherein said gas is contracted by a narrowing of opposing side walls in said gas outlet.

33. (original) A method according to Claim 27 wherein said gas is diffused by an expansion of opposing side walls in said gas outlet.

34. (original) A method according to Claim 27 wherein said support is moved into and out of said chamber through said gas outlet.

35. (original) A method according to Claim 34 wherein said support is moved by a mechanism comprising a holding element for said support wherein said holding element is a low drag body having Reynolds numbers that are less than about 3000.

36. (original) A method according to Claim 27 wherein said gas is selected from the group consisting of nitrogen, argon, neon and helium.

37. (original) A method according to Claim 27 wherein said reagents are monomer addition reagents.

38. (original) A method according to Claim 27 wherein said biopolymers are polynucleotides or polypeptides.

39. (original) A method according to Claim 27 wherein said biopolymers are synthesized on said surface in multiple arrays and said support is subsequently diced into individual arrays of biopolymers on a support.

40. (original) A method according to Claim 27 for synthesizing an array of biopolymers on a surface of a support, said method comprising adding one or more polymer subunits at each of multiple feature locations on said support during each of multiple rounds of subunit additions wherein each round of subunit additions comprises:

(a) introducing said support into said reaction chamber,

(b) bringing said support and a dispensing system for dispensing said polymer subunits for the synthesis of said biopolymers into a dispensing position relative to said activated discrete sites on said surface,

(c) dispensing said polymer subunits to said discrete sites, and

(d) removing said support and/or said dispensing system from said relative dispensing position.

41. (original) A method according to Claim 27 wherein said biopolymers are synthesized on said surface in multiple arrays and said support is subsequently diced into individual arrays of biopolymers on a support.

42. (original) A method according to claim 27 further comprising exposing the array to a sample and reading the array.

43. (original) A method according to claim 42 comprising forwarding data representing a result obtained from a reading of the array.

44. (original) A method according to claim 43 wherein the data is transmitted to a remote location.

45. (original) A method according to claim 42 comprising receiving data representing a result of an interrogation obtained by the reading of the array.

46. (original) A device comprising:

(a) a mechanism for moving a support into and out of a chamber and for positioning said support relative to a device for dispensing reagents to a surface of said support to form an array of biopolymer features thereon, said mechanism comprising a holding element for said support wherein said holding element is a low drag body having Reynolds numbers that are less than about 3000, and

(b) a controller for controlling the movement of said mechanism for moving said support.